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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/656,918

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Robin M. Forbes Jones

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Patrick J. Viccaro, Esquire
Allegheny Technologies Incorporated
1000 Six PPG Place
Pittsburgh, PA 15222-5479

EXAMINER

ALEXANDER, MICHAEL P

ART UNIT

PAPER NUMBER

1742

DATE MAILED: 06/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/656,918

Applicant(s)

FORBES JONES ET AL.

Examiner

Michael P. Alexander

Art Unit

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 May 2006.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-52 is/are pending in the application.
4a) Of the above claim(s) 35-49 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-14, 16-28, 30-34 and 50-52 is/are rejected.
7) ☒ Claim(s) 15 and 29 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim(s) 1-52 is/are pending. Claims 35-49 are withdrawn from consideration.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 21, 24-25 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over the MP35N alloy material shipped to FWM on December 10, 2002 (see Exhibit 5) in view of Snape (US 3,816,106) or Susukida (US 4,474,733).

Regarding claims 21 and 24-25, the applicant submits that an alloy comprised of, in weight percent based on total alloy weight: at least 20 cobalt, 34.76 Ni; 20.46 Cr; 9.46 Mo; 0.008 C; 0.03 Mn; 0.02 Si; 0.001 P; less than 0.01 Ti; 0.001 S; 0.32 Fe; and 0.009 B as prior art. The Examiner asserts that the alloy would inherently be substantially free of titanium nitride and mixed metal carbonitride inclusions because the alloy only contains 36 ppm of nitrogen.

Art Unit: 1742

Still regarding claims 21 and 24-25, the alloy does not specify the presence of at least 0.05 wt% aluminum, at least 5 ppm calcium, at least 5 ppm magnesium or at least 5 ppm cerium. However, Snape teaches (col. 2 lines 23-31) adding 0.02 to 1 percent aluminum in order to increase strength and minimize hot workability problems or adding 20 to 50 ppm of magnesium in order to improve hot workability, and Susukida teaches (col. 3 lines 23-32) adding 5 to 500 ppm of calcium in order to improve hot workability. It would have been obvious to one of ordinary skill in the art to modify the alloy composition of the submitted prior art by adding 0.02 to 1 percent aluminum in order to increase strength and minimize hot workability problems as taught by Snape or by adding 20 to 50 ppm of magnesium in order to improve hot workability as taught by Snape or by adding 5 to 500 ppm of calcium in order to improve hot workability as taught by Susukida.

Regarding claim 50, the Examiner asserts that the alloy would inherently qualify for use in surgical implant applications under ASTM standard specification F 562.

Claims 1-11, 16-20 and 32-34 rejected under 35 U.S.C. 103(a) as being unpatentable over ASTM F 562-02 in view of Cockcroft (Inclusions and the EB Refining of Superalloys), on the same grounds as stated in the Office Action of 5 January 2006.

Claims 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over ASTM F 562-02 in view of Cockcroft as applied to claim 1 above, and further in view of Snape (US 3,816,106), on the same grounds as stated in the Office Action of 5 January 2006.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over ASTM F 562-02 in view of Cockcroft as applied to claim 1 above, and further in view of Susukida (US 4,474,733), on the same grounds as stated in the Office Action of 5 January 2006.

Claims 21-28, 30-31 and 51-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over ASTM F 562-02 in view of Cockcroft and further in view of Snape (US 3,816,106) or Susukida (US 4,474,733).

Regarding claims 21 and 26-28, ASTM F 562-02 teaches (Table 1) an alloy comprising, in weight percent based on total alloy weight: at least 20 cobalt, 33.0 to 37.0 nickel; 19.0 to 21.0 chromium; 9.0 to 10.5 molybdenum; up to 0.025 carbon; up to 0.15 manganese; up to 0.15 silicon; up to 0.015 phosphorus; up to 0.010 sulfur; up to 1.0 iron; and up to 0.015 boron. ASTM F 562-02 does not specify that the alloy would contain at least one of at least 0.05 weight percent aluminum, at least 5 ppm calcium, at least 5 ppm magnesium, and at least 5 ppm cerium, and ASTM F 562-02 does not specify that the alloy would be substantially free of titanium nitride and mixed metal carbonitride inclusions.

With respect to the additions of aluminum, calcium or magnesium in claims 21 and 26-28, Snape teaches (col. 2 lines 23-31) adding 0.02 to 1 percent aluminum in order to increase strength and minimize hot workability problems or adding 20 to 50 ppm of magnesium in order to improve hot workability, and Susukida teaches (col. 3 lines 23-32) adding 5 to 500 ppm of calcium in order to improve hot workability. It would have been obvious to one of ordinary skill in the art to modify the alloy composition of ASTM F 562-02 by adding 0.02 to 1 percent aluminum in order to increase strength and

Art Unit: 1742

minimize hot workability problems as taught by Snape or by adding 20 to 50 ppm of magnesium in order to improve hot workability as taught by Snape or by adding 5 to 500 ppm of calcium in order to improve hot workability as taught by Susukida.

With respect to the limitation that the alloy would be substantially free of titanium nitride and mixed metal carbonitride inclusions in claims 21 and 26-28, Cockcroft teaches (page 143-144) reducing the nitrogen content of superalloys using electron beam meltings in order to eliminate TiN inclusions. It would have been obvious to one of ordinary skill in the art to modify the superalloy composition of ASTM F 562-02 by reducing the nitrogen content using electron beam melting in order to eliminate TiN inclusions as taught by Cockcroft. The Examiner asserts that the alloy of ASTM F 562-02 as modified by Cockcroft would inherently be substantially free of titanium nitride and mixed metal carbonitride inclusions.

Regarding claims 22-23, ASTM F 562-02 does not specify that the alloy would contain less than 20 ppm nitrogen. However, Cockcroft teaches (pages 143-144) reducing the nitrogen content of superalloys using electron beam melting in order to eliminate TiN inclusions. It would have been obvious to one of ordinary skill in the art to modify the superalloy composition of ASTM F 562-02 by reducing the nitrogen content using electron beam melting in order to eliminate TiN inclusions as taught by Cockcroft.

Regarding claims 24-25, ASTM F 562-02 teaches (Table 1) that the alloy would comprise up to 1.0 weight percent titanium, which overlaps with the claimed ranges of titanium, which is prima facie evidence of obviousness. See MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art to select the claimed amount of

titanium from the range disclosed by ASTM F 562-02 because ASTM F 562-02 teaches the same utility throughout the disclosed range.

Regarding claim 30, ASTM F 562-02 does not specify that the alloy would exhibit significant oxygen embrittlement at grain boundaries. However, Cockcroft teaches (pages 143-144) reducing the oxygen content of superalloys using electron beam melting in order to eliminate MgO inclusions. It would have been obvious to one of ordinary skill in the art to modify the superalloy composition of ASTM F 562-02 by reducing the oxygen content using electron beam melting in order to eliminate MgO inclusions as taught by Cockcroft. The Examiner asserts that the alloy of ASTM F 562-02 as modified by Cockcroft would inherently not exhibit significant oxygen embrittlement at grain boundaries.

Regarding claim 31, the Examiner asserts that the alloy of ASTM F 562-02 as modified by Cockcroft would inherently have an endurance limit greater than 100 ksi because the alloy would have substantially the same composition as that of the claimed invention. See MPEP 2112.01 I.

Regarding claims 51-52, see the rejection of claim 22 above.

Response to Arguments

Applicant's arguments filed 22 May 2006 have been fully considered but they are not persuasive.

First, applicant argues that Cockcroft focuses on reducing the level of inclusion in a specific alloy, IN718, and therefore the teachings of Cockcroft cannot be used to modify the composition of ASTM F 562-02. The Examiner disagrees. Although

Art Unit: 1742

Cockcroft only performs the experiments on one specific alloy, Cockcroft teaches the goal of reduction of inclusions in superalloys in general by consistent reference to superalloys not just IN718.

Second, applicant argues that the stated motivation to combine (i.e. "to eliminate TiN inclusions") is not proper because it does not indicate why one would go to the added work and expense of electron beam melting the alloy. In response, the Examiner asserts that one of ordinary skill in the art would know why it is necessary to eliminate TiN inclusions. Cockcroft teaches (pages 146-147) that excessive TiN causes segregation during solidification. Cockcroft also teaches (page 149 2nd paragraph) that the present goal of superalloy melting processes is to remove such inclusions.

Third, applicant argues that prior to the discoveries by the instant inventors, there existed no clear understanding of the failure mechanism in pacemaker lead wires and other wire formed from MP35N alloy used in surgical implant applications and that there also existed no motivation or suggestion in the art to inhibit the content of inclusions in the MP35N-type alloys. In response, the Examiner notes that evidence of secondary considerations must be set forth in an affidavit or declaration. See MPEP 716.01(c). Additionally, the Examiner notes that the motivation to inhibit content of inclusions is taught by Cockcroft (i.e. to reduce segregation during solidification).

Fourth, applicant argues that the teachings of Snape and Susukida cannot be used to modify the composition of ASTM F 562-02 because the compositions of Snape and Susukida differ from the composition of ASTM F 562-02. In response, the Examiner notes that the applicant has not stated any specific reason why the different

Art Unit: 1742

compositions would make one skilled in the art avoid the teachings of Snape and Susukida. The applicant's argument seems to be that the difference in composition itself would make one skilled in the art avoid the teachings of Snape and Susukida. Without further rationale, evidence or legal precedent for this argument, the Examiner asserts that the rejection must be maintained.

Fifth, applicant argues that Susukida teaches adding calcium to improve workability and high temperature mechanical properties, whereas the instant specification teaches adding calcium to inhibit formation of titanium nitride and other inclusions. In response, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Sixth, applicant argues that Susukida teaches away from including cobalt in an alloy in excess of 9.4 wt%, whereas the alloy of the claimed invention includes at least 20 wt% cobalt. In response, the Examiner notes that Susukida teaches that cobalt in excess of 9.4 wt% reduces the cold workability. The Examiner asserts that this is not a teaching away from the claimed invention and is instead merely a teaching the result of increasing the cobalt content. The claimed invention is not concerned with cold workability, and the teaching of Susukida relied upon is that of adding calcium rather than cobalt.

Applicant's arguments, see pages 21-22, filed 22 May 2006, with respect to claims 15 and 29 have been fully considered and are persuasive. The rejections have been withdrawn.

Allowable Subject Matter

Claims 15 and 29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael P. Alexander whose telephone number is 571-272-8558. The examiner can normally be reached on M-F 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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ROY KING
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700